

INCH-POUND

MIL-HDBK-38790  
24 February 1997

DEPARTMENT OF DEFENSE  
HANDBOOK  
PRINTING PRODUCTION OF TECHNICAL MANUALS

THIS HANDBOOK IS FOR GUIDANCE ONLY  
DO NOT CITE THIS DOCUMENT AS A REQUIREMENT



AMSC N/A

AREA TMSS

Distribution Statement A. Approved for public release; distribution is unlimited.

## FOREWORD

1. This handbook is approved for use by all Departments and Agencies of the Department of Defense.
2. This handbook is for guidance only. This handbook cannot be cited as a requirement. If it is, the contractor does not have to comply.
3. The information contained in this handbook covers the handling and use of photolithographic negatives, offset plates, direct image and camera-ready copy, reproduction assembly sheets, and printing of Technical Manuals (TMs), including changes, revisions, supplements, and reprints. It preserves the fundamental guidance and lessons learned formerly found in MIL-P-38790.
4. If a particular requirement is not applicable to all Services it is prefixed, as indicated below, to identify the applicable Service:
  - (A) Army
  - (N) Navy
  - (M) Marine Corps
  - (F) Air Force.
4. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Det 2, HQ ESC/AV-2C, 4027 Col. Glenn Hwy., Suite 300, Dayton, OH 45431-1672 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

## CONTENTS

<u>PARAGRAPH</u>		<u>PAGE</u>
	FOREWORD .....	ii
1.	SCOPE .....	1
1.1	Scope .....	1
2.	APPLICABLE DOCUMENTS .....	1
2.1	General .....	1
2.2	Government documents .....	1
2.2.1	Specifications, standards, and handbooks .....	1
2.2.2	Other government documents, drawings, and publications .....	1
2.3	Non-government publications .....	2
2.4	Order of precedence .....	2
3.	DEFINITIONS .....	2
3.3.1	Direct image copy (DIC) .....	2
3.3.2	Direct image master (DIM) .....	2
3.3.3	Photolithographic negative .....	2
3.3.4	Printing .....	2
3.3.5	Printing materials .....	2
3.3.6	Reproduction assembly sheet .....	2
3.3.7	Reproducible camera-ready copy .....	2
4.	GENERAL PRINTING GUIDANCE .....	3
4.1	Photolithographic negatives .....	3
4.1.1	Negative layout dimensions .....	3
4.1.2	Opaquing .....	3
4.1.3	Screen .....	3
4.1.4	Film thickness .....	3
4.1.5	Outline halftone .....	3
4.1.6	Combination line and halftone .....	3
4.1.7	Page and illustration negatives .....	3
4.1.8	Color negatives .....	3
4.1.8.1	Preparation (color separations) .....	3
4.1.8.2	Content (register marks) .....	3
4.1.8.3	Submission .....	4
4.1.8.4	Color page samples .....	4
4.1.8.5	Exact color duplication .....	4
4.1.9	Unacceptable negatives .....	4
4.1.10	Scroll checklists .....	4
4.2	Offset plates .....	5
4.3	Direct Image Copy and Reproducible Camera-Ready copy .....	5
4.4	Page size .....	5
4.5	Retention of reproduction media .....	5
4.6	Reproduction assembly .....	5
4.7	Printing .....	7
4.7.1	Paper stock and cover stock .....	7
4.7.1.1	Paper stock .....	8
4.7.1.2	Cover/title page stock .....	8
4.7.1.2.1	Hidden hinge covers .....	8
4.7.1.3	Insert, tab, divider stock .....	8
4.7.2	Ink .....	8

<u>PARAGRAPH</u>	<u>CONTENTS</u>	<u>PAGE</u>
4.7.2.1	Colors (ink) .....	8
4.7.3	Presswork .....	8
4.7.3.1	Page imposition .....	8
4.7.4	Reprints .....	8
4.7.5	Variance in quantity .....	8
4.7.6	Binder work .....	8
4.7.6.1.	Trimming .....	8
4.7.6.1.1	Single sheets .....	9
4.7.6.1.2	Foldout sheets .....	9
4.7.6.1.3	Scroll checklist .....	9
4.7.6.2	Folding .....	9
4.7.6.3	Collating .....	9
4.7.6.3.1	Collating exception .....	9
4.7.6.4	Drilling .....	9
4.7.6.5	Binding looseleaf manuals .....	9
4.7.6.5.1	Small manuals .....	9
4.7.6.5.2	Medium and large manuals .....	9
4.7.6.6	Bound manuals .....	9
4.8.	Printing and binding quality .....	9
4.9	Packaging guidelines .....	9
4.9.1	Preliminary technical manuals .....	9
4.9.2	Printing materials .....	10
4.9.2.1	Container information .....	10
4.9.2.2	Packing list .....	10
4.9.2.3	Printing materials .....	10
4.10	Shipping guidance .....	10
4.10.1	Printed copies .....	10
4.10.1.1	Initial distribution (ID) .....	10
4.10.1.1.1	Shipments .....	10
4.10.1.1.2	Weight limitations .....	11
4.10.1.1.3	Mail markings .....	11
4.10.1.1.4	Additional mailing labels .....	11
4.10.1.1.5	Shipments to APO/FPO addresses .....	11
4.10.1.2	Backup/replenishment stock .....	12
4.10.1.2.1	Backup/replenishment stock shipments .....	12
4.10.1.2.2	High speed transportation .....	12
4.10.1.2.3	Additional information .....	12
4.10.2	Classified material .....	12
4.10.3	Reproduction media .....	12
5.	NOTES .....	13
5.1	Intended use .....	13
5.2	Subject term (key word) listing .....	13
5.3	Changes from previous issue .....	13

CONTENTS

<u>PARAGRAPH</u>		<u>PAGE</u>
FIGURES		
FIGURE 1.	Typical reproduction assembly sheet .....	14
FIGURE 2.	Foldout sheet folding .....	15
FIGURE 3.	Impositioning and single page (after trimming) dimensions .....	16
FIGURE 4.	Sample bleed border impositioning .....	18
FIGURE 5.	Drilling dimensions for 6 and 7 hole manuals .....	19
FIGURE 6.	Drilling dimensions for 3,5, and 9 hole manuals .....	20
FIGURE 7.	Sample initial distribution (ID) labels. ....	21
FIGURE 8.	Sample backup stock labels .....	22
CONCLUDING MATERIAL .....		23

## 1. SCOPE

1.1 Scope. This handbook provides guidance for the layout, reproduction, and binding of printed material.

## 2. APPLICABLE DOCUMENTS

2.1 General. The documents listed below are not necessarily all of the documents referenced herein, but those needed to fully understand the information provided by this handbook.

### 2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto.

## STANDARDS

### DEPARTMENT OF DEFENSE

MIL-STD-38784

Technical Manuals - General Style and Format Requirements

(A) MIL-STD-40051

Technical Manual Preparation

## HANDBOOKS

### DEPARTMENT OF DEFENSE

(A) MIL-HDBK-1222

Guide to the General Style and Format of US Army Workpackage Technical Manuals

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2.2 Other government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein.

## PUBLICATIONS

### DEPARTMENT OF DEFENSE

DOD 5220.22-M

Industrial Security Manual for Safeguarding Classified Information

### NAVY

NAVAIR 00-25-150

Specification and Policy Guide for Printing NAVAIR Technical Manuals

(Application for copies should be addressed to the Commanding Officer, Naval Air Technical Services Facility (Code 012), 700 Robbins Avenue, Philadelphia, PA 19111-5097.)

NAVPUBINST 5604.27

US Postal Service (USPS) Regulations Governing use of Agency Official Mailing Indicia

(Application for copies should be addressed to the Commanding Officer, Naval Publications and Forms Center (Code 100), 5801 Tabor Avenue, Philadelphia, PA 19120-5099.)

### GOVERNMENT PRINTING OFFICE (GPO)

Publication 310.1

Quality Assurance Through Attributes Program

Publication 310.2

Solicitation Provisions, Supplemental Specifications, and Contract Clauses

JOINT COMMITTEE ON PRINTING

Congress of the United States Government Paper Specification Standards

(Application for copies should be addressed to the Superintendent of Documents, US Government Printing Office, Washington, DC 20402.)

UNITED STATES POSTAL SERVICE

Domestic Mail Manual

(Copies of this document may be obtained from any United States Postal Service (USPS)).

**2.3 Non-government publications.** The following document(s) form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DODISS, and supplement thereto.

STANDARDS

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI PH1.25-1983

Safety Photographic Film

(Application for copies should be addressed to the American National Standards Institute, Inc., #1430 Broadway, New York, NY 10018.)

**2.4 Order of precedence.** In the event of a conflict between the text of this document and the references cited herein the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. DEFINITIONS

**3.3.1 Direct image copy (DIC).** One-to-one reproducible without paste-overs or mortises, suitable for use on a copier or making direct image masters. Quality should be such that if a negative were to be prepared, only the imperfection due to the quality of photolithographic film would require touch up before making the offset plates.

**3.3.2 Direct image master (DIM).** The chemically treated mat exposed using a direct image copy. The master mat is affixed to a press that uses direct image offset printing processing.

**3.3.3 Photolithographic negative.** Negative film bases (cellulose acetate, triacetate, polystyrene, polyester, vinyl, etc.) that conform to ANSI PH1.25-1983. When manuals are printed by the photo offset process, the negatives will be used to make press plates to accomplish printing.

**3.3.4 Printing.** The finished printed manuals used to disseminate technical information, instructions, and safety procedures pertaining to the installation, operation, maintenance, and modification of equipment and materials of the military services.

**3.3.5 Printing materials.** The printing plates, negatives, DIM, DIC, and any other related materials are not intended to be distributed or used in any way other than as specified by the acquiring activity.

**3.3.6 Reproduction assembly sheet.** This sheet contains the detailed instructions to the printer. Its purpose is to assure that the pages and illustrations of manuals to be printed will be assembled in proper sequence, pages will be folded as requested, and that printing is accomplished in the colors designated.

**3.3.7 Reproducible camera-ready copy.** Reproducible copy suitable for making negatives. Paste-overs and mortised changes are permitted. Copy can be larger than the printed version. This copy is used for printing by the xerographic method or for creating photolithographic negatives to be used for printing.

#### 4. GENERAL PRINTING GUIDANCE

**4.1 Photolithographic negatives.** Photolithographic negatives must be of highest quality standard photolithographic film and furnished in such condition that no additional work is required on them prior to printing. Negative film bases (cellulose acetate, triacetate, polystyrene, polyester, vinyl, etc.) must conform to ANSI PH1.25-1983. Do not use thin base film (less than 0.004 inch in thickness (see 3.1.4 for exceptions)) and paper base material for negatives film. Film with a slight matte finish on the emulsion side is acceptable.

**4.1.1 Negative layout dimensions.** Trim negatives so that regardless of length, the top margin is 0.5 inch plus or minus 0.125 inch from the printing area (regardless of width), and the outside margin (side away from the binding edge) is 0.5 inch plus or minus 0.125 inch from the printing area. In no case should the margin from the printing area to the negative edge be less than 0.375 inch. The dimensions of single page negatives are to be uniform within a manual.

**4.1.2 Opaquing.** Properly opaqued unscreened negatives eliminate blemishes on the film that would be reproduced by printing. Opaque only on the emulsion side. Opaquing screen negatives done away from the subject image area eliminates shadows and inadvertent paste-up lines.

**4.1.3 Screen.** Use a 120 to 133 line screen for halftone and shaded negatives.

**4.1.4 Film thickness.** Film must be less than 0.004 inch thick. (A)(M)(N) If taping a halftone negative to the emulsion side of a polyester halftone negative, behind the window in the basic page negative, is required, it should be no less than 0.002 inches thick and no more than 0.0024 inches thick. Acetate halftone negatives must be less than 0.003 inches thick and no more than 0.0035 inches thick.

**4.1.5 Outline halftone.** (A)(M)(N) Square halftone negatives, without borders, will satisfactorily portray the subject matter of an illustration. Do not use silhouettes and vignettes. Outline halftone negatives are only required to properly portray the subject matter of the illustration.

**4.1.6 Combination line and halftone.** (A)(M)(N) Single negatives, either line or halftone, can portray the illustration. Provide combination line and halftone negatives only if required to properly portray the subject matter, if both line and halftone are to be printed in the same color.

**4.1.7 Page and illustration negatives.** Position all illustrations (line, halftone, and combination except color overlays) into the page negative by photolithographic methods or strip-in (mortised). Hold strip-ins securely on all sides by lithographic masking tape permitting no extraneous light. Place tape on the glossy side (side opposite the emulsion side).

**4.1.8 Color negatives.**

**4.1.8.1 Preparation (color separations).** Prepare negatives for each color page for the primary process colors and black. Overprint primary colors when secondary colors are necessary. Obtain primary color shades by using shading media on original art. Combine two color separation (overlay) negatives when two printings of the same color for the same page are required. Printing of multiple solids and tints in excess of four inks requires overprinting standard primary process color inks. Combine solids and screened tints for each process color on one negative. Screens should not exceed 133 lines per inch. Use standard process screen rotation angles. Printing of up to four hues, including black, in one publication, without overprinting of screened tints may be prepared for any three Pantone Matching System (PMS) colors, plus black.

**4.1.8.2 Content (register marks).** Permanently mark each color separation (overlay) negative with the publication number, figure number, page number, name of the color or PMS number, and the word "TOP", on the upper center, outside final trim area, right reading, emulsion side down. At least three register marks, outside the printable area, are required for each overlay in a set; one centered on each side and one slightly off center at the top or bottom. Matching register marks are also required on the black (key) negative for each set. (Do not use key punch or pin register systems, in place of register marks or color separation negatives.)



4.1.8.3 Submission. Place all negatives in a set making-up each individual publication page (including the black (key) negative, plus the negative for each required color) in a single envelope (one envelope per page). Show the publication number, page number, colors, and security classification, if any on each envelope. See DOD 5220.22-M for security marking requirements.

4.1.8.4 Color page samples. As an aid in printing changes to color illustrations in the basic manual, accompany each set of color negatives with the following, placed in the envelope containing the appropriate negatives:

- a. One printed page in color. Do not print solely to provide this page. New color illustrations require no samples except as noted in 4.1.8.5.
- b. Provide color pages being changed or reused.
- c. Mark minor changes on the printed page with colored pencils, or when additional color is added, a PMS number, name, or color swatch of the color fastened to the page and keyed to the area to be printed in the added color. Ensure that additional colors, or changed color areas, coincide with the changed negatives.

4.1.8.5 Exact color duplication. When a specific color must be produced by printing, attach a swatch of the required color to the applicable negative. When possible, specify the required ink manufacturer and ink color number. Use PMS color number codes when color swatches are not available.

4.1.9 Unacceptable negatives. Negatives that do not provide faithful and satisfactory reproduction or that do not meet the requirements of 4.1.5, 4.1.6, 4.1.8.1, and 4.1.8.2 will not be accepted. Other conditions making negatives unacceptable include:

- a. Surface damaged by scratches, tears, cracks, or otherwise defaced.
- b. Improperly or too heavily opaqued, or where opaquing has chipped off or dissolved.
- c. Halftones that have opaqued highlights, or attempts to retouch by use of opaque.
- d. Loose stripping or incorrect taping.
- e. Gum from tape or opaquing material imprinted on adjoining negatives.
- f. Areas that are not to be printed blocked out with masking papers.
- g. Delivered in "flats" of goldenrod or other masking paper.
- h. Separate negatives for printing secondary colors in lieu of overprinting primary colors (see 4.1.8.1).
- i. Out of register (color).
- j. Incomplete or requiring additional work.
- k. Negatives opaqued on wrong side.
- l. Attempts to correct negatives by mortising words, sentences, paragraphs, publication number, page number, security classification, or any non-illustrative halftone material.
- m. Halftone taped to blank window in lieu of stripping (mortising).
- n. Taping on the emulsion side.
- o. Rolled or shipped in tubes.
- p. Spliced or creased foldout pages.

4.1.10 Scroll checklists. Use UV emulsion, black image, sensitized on one side, matte on reverse side, 0.0043 inch thick mylar polyester film (Technifax part number P3200M or equivalent).

4.2 Offset plates. (A)(F) When required, exact printing size direct image offset plates (photo direct or equal) must be capable of 1500 text, halftone, and color quality impressions (when applicable).

4.3 Direct Image Copy and Reproducible Camera-Ready copy. DIC is preferred for all manuals in lieu of photolithographic negatives or offset plates. When the capability to produce DIC does not exist, reproducible camera-ready copy may be furnished, if approved by the acquiring activity. The acquiring activity will also specify the media for changes, revisions, and supplements for existing TMs. Reproducible camera-ready copy or DIC criteria:

- a. Prepare reproducible copy using a positive-to-positive (Xerography) process or as a laser print copy of not less than 300 dots per inch (DPI) generated directly from the automated data base. Substitute reproduction methods using other than positive-to-positive process and the generation of film negatives as a product or by-product of the process are not acceptable.
- b. High contrast positives must meet the requirements of MIL-STD-38784 and GPO Publication 310.1, quality level three. Lines in both text and illustrations should be sharp, clear, and legible. Do not use any tape-overs or splices. A minimum three year shelf life is required. Reproduction must be one-to-one.

4.4 Page size. See figure 3 to determine actual page sizes, including foldout pages. Tolerances must be consistent within each manual. When circumstances require acquisition of a manual of a size different from that cited in MIL-STD-38784 consult the contract for actual dimensions and tolerances.

4.5 Retention of reproduction media. Store reproduction media (photolithographic negatives, DIC, offset plates, camera-ready copy) to provide safe shelf-life of three years.

4.6 Reproduction assembly. See figure 1 for typical reproduction assembly (similar to a (M) publications running sheet). Preparation instructions herein are very general and may vary by Service. See the requiring activity for complete instructions. Prepare reproduction assembly/-publications running sheet to accompany the reproduction media for any type of technical manual, change, revision, or supplement. General preparation instructions for the reproduction assembly/publication running sheets are provided below:

**DATE.** Enter the date the form is prepared.

**PUB DATE.** Enter the date of the manual (for basic) or change date (if for a change) being printed.

**SHEET number.** Enter the sheet number relating to the form pages, e.g., Sheet 1 of 3, 2 of 3, etc.

**TITLE/NUMBER AND SECURITY CLASSIFICATION.** Enter the publication number followed by the security classification. If the assembly sheet is for a change, enter the classification for that particular change. An unclassified change to a classified manual would include the words "UNCLASSIFIED CHANGE TO A CLASSIFIED MANUAL."

**DATE OF LAST REVISION.** Enter the date of the basic manual or revision date.

**WORK ORDER NO.** Leave blank.

**PROGRAM WORK REQUEST.** Use for internal tracking or other control purposes.

**ISSUE NO.** Enter appropriate change level, e.g., change 1, change 2, etc.

**TYPE OF JOB.** Mark appropriate box or circle appropriate word; include change level.

(Column heads)

**FRONT COVER/INSIDE FRONT COVER/INSIDE BACK COVER/BACK COVER.** If separate cover are required, enter an "X" in the appropriate spaces.

**SYMBOL.** If the material is all reproducible copy (including DIC) or all in negative form, enter the letter "R" or "N," respectively, on the top line for each sheet. If the material is in both reproducible copy and negative form, enter the letter "R" or "N" on each line, as appropriate. Use the letter "F" for foldout pages. (F) If the material is a change and pages of previously furnished material are taken from file, enter the letter "B" on the appropriate lines to indicate unchanged backup pages.

**PAGE NO and PRINTED FOLIOS/Page numbers.** List all pages, in sequence, including the title page, list of effective pages, pages numbered with Roman and Arabic numerals, page suffix numbers, and blank pages. List each page separately. For running sheets, list the pages beside the appropriate "TRUE FOLIOS" space to show the exact order of the pages in the manual. List changed, backup, and blank pages for manual changes; including the last page, if blank.

**FIGURE or FIGURE/TAB NO.** List only the figure numbers for illustrations that are not mounted (art separate from the page but included when printed) on the margin or reproduction media. Use extra lines if a page contains more than one illustration. If the illustration is in negative form, enter the symbol "(N)" following the figure number. List separate art (e.g., an illustration without a figure number) as "Art A". Leave this space blank if illustrations are mounted on the margin, reproduction media copy, or are already stripped into the page negative.

**HALFTONE.** Enter the quantity of separate halftone illustrations for each page.

**LINE.** Enter the quantity of separate line illustrations for each page when available art, in negative form, is to be stripped into a new page negative.

**STRIP-IN.** For original manual page negatives, enter the quantity of illustration strip-in negatives. For all applicable strip-ins, enter the symbol "(N)" following the number in the "FIGURE NO." column. Provide special instructions for pickup as necessary. (F) For changes, indicate the preceding information, plus the quantity of illustrations for which the unchanged art negative is already available and is to be stripped into the new changed page negative.

**DRAWING NUMBER.** Enter the art control number, drawing number, contractor drawing control number, etc., as appropriate.

**COLOR.** Indicate the quantity of colors to be printed on a page. Give specific colors, including black, in the special instruction column. Leave this space blank when a page is to be printed only in black.

**FOLD-OUT FOLDS.** Enter the appropriate letter (A, B, or C) or number (2, 4, or 6) corresponding to the fold used (see figure 2).

**FOLD-OUT PAGES/UNITS.** Enter the number of pages of each foldout including blank apron. Each multiple of the basic page, or portion thereof, equals one page. For example, an 8.5 by 11 inch manual, with a 23 inch (see figure 3, dimension A) foldout is three pages; a 27 inch foldout equals four pages.

**FOLD-OUT BLANKS.** Show the same quantity as the printed side of the foldout page.

**SPECIAL INSTRUCTIONS.** Use this space to: list the colors, including black (color pages only), applicable to individual pages; give sheet size including blank apron; provide essential information to the printer; state which negatives are to be picked up

from files; explain any other assembly or print requirements not obvious or not listed on associated print request documents.

**SUB TOTALS.** Enter the totals of each column with the following variations:

**PAGE NO.** Count all single size pages, including blanks. Do not include foldout pages.

**FIGURE NO.** Leave this space blank.

**COLOR.** Leave this space blank.

**FOLD-OUT FOLDS.** Count each of the letters/numbers in this column as single folds. This subtotal is actually a count of foldout sheets.

**FINAL CHECK TOTALS ONLY.** If more than one assembly sheet is required, insert these totals only on the first sheet.

**TOTAL.** Enter the total number of pages to be printed. Determine the total by adding together the subtotals in the "PAGE NO.," "FOLD-OUT PAGES" and "FOLD-OUT BLANKS" columns. This total will always be an even number.

**BLANK.** Add the total of the "PAGE NO." and "FOLD-OUT BLANK" columns.

**COLOR.** Add together the "COLOR" column and the color pages in the "FOLD-OUT PAGES" column. This is a page total, not color quantities.

**BLACK AND WHITE.** Subtract the total number of blank pages (4.6.11.2) and color pages (4.6.11.3) from the final total (4.6.11.1).

**STRIP-IN.** Enter the total quantity shown in the "STRIP-IN" subtotal column.

**NEGATIVE ART.** Add the individual illustrations in the "FIGURE NO." column followed by the letter "(N)."

**HALFTONE.** Enter the total shown in the "HALFTONE" subtotal column.

**LINE.** Enter the total shown in the "LINE" subtotal column.

**A or 2 FOLD, B or 3 FOLD, C or 4 FOLD.** Group and add together the individual letters/numbers shown in the "FOLD-OUT FOLDS" column. (N) These instructions apply to the (front and back) F&B 2, 3, 4, and 5 UNIT or one side only (OSO) 2, 3, 4, or 5 UNIT blocks.

**2 COLORS, 3 COLORS, 4 COLORS, 5 COLORS.** Group and add together the information shown in the "Special Instructions" column. Disregard the variety of colors, e.g., if lines show that two colors apply to three pages (regardless if they are black and red, black and yellow, black and blue), the "2 COLOR" total quantity is "3"; likewise, if lines show three colors apply to six pages, the "3 COLOR" total quantity is "6".

**TRIM.** Place an "X" before the appropriate trimming requirement.

**ASSEMBLER, ADDRESS, PHONE NO.** Provide the name, company or government address and business telephone number (including area code and extension) of the individual who prepared the form. This information is necessary if there are questions regarding the assembly of the material. If the acquiring activity desires that the printer contact them, rather than the assembler, the acquiring activity can add that information to this block.

**4.7 Printing.** GPO Publication 310.1 printing quality level IV requirements apply. Print all pages head to head unless otherwise specified.

**4.7.1 Paper stock and cover stock.** Use the type and color (if other than white) of paper stock, cover stock, insert, tab, and divider stock specified by the acquiring activity. See the Government Paper Specification Standards, published by the Joint Committee on Printing (JCP), Congress of the

United States. Use of recycled paper is acceptable if it meets JCP requirements. (A) Print covers for classified manuals in a different color than unclassified manuals.

4.7.1.1 Paper stock. Print manuals on JCP-A60 (50 pounds per 500 sheets) white paper. If required, print foldouts, flight manual checklists, job guides, work cards, and similar manuals subject to heavy wear and tear on JCP-O40 (115 pounds per 500 sheets) white or yellow paper. (A) Do not use yellow paper stock. (F) Use green paper stock for all Technical Order Page Supplements (TOPS).

4.7.1.2 Cover/title page stock. (A)(M)(N) Print TM covers on the stock designated by the acquiring activity. Cover stock types are:

- a. JCP-K10 (110 pounds per 500 sheets) white, blue, buff, green, pink, salmon, yellow.
- b. JCP-L20 (50 pounds per 500 sheets) gray, blue
- c. JCP-P10 (150 pounds per 500 sheets) natural
- d. JCP-Q70 (150 pounds per 500 sheets) gray
- e. (N) Linear Polyethylene Plastic Covers (natural/clear)
- f. Print title pages on JCP-A60 (50 pounds per 500 sheets) white paper.

4.7.1.2.1 Hidden hinge covers. (N) Provide front and back plastic covers; each one piece of semirigid plastic with an integral hinge formed in the material, 0.75 inch from the binding edge. The hinge is to be formed by heat and pressure, not by removing a portion of the material or scribing with a pointed instrument. The cover must remain flat in normal use and be capable of closing readily under its own weight. Cut clean all edges.

4.7.1.3 Insert, tab, divider stock. (F)(M)(N) Stock required for inserts, tabs, and dividers may be:

- a. JCP-K20 (110 pounds per 500 sheets) white, blue, buff, green, pink, salmon, yellow.
- b. JCP-P10 (150 pounds per 500 sheets) natural.

4.7.2 Ink. Use lithographic or other inks suitable for offset printing. The quality of ink used must produce sharp, clear, and clean copy. It must not strike through or offset on other pages, fade, or bleach.

4.7.2.1 Colors (ink). Use PMS color names and numbers specified by the acquiring activity. Colors produced by inks will be true colors, e.g., red is to be true red, not coral or magenta. Ink colors will be intense and brilliant so that sufficient contrast exists between tones of the color when printed. When secondary colors are obtained by overprinting, use primary color inks of sufficient transparency to produce the desired colors.

4.7.3 Presswork. Impressions obtained by offset printing are to reflect an exact reproduction of the copy. Printing quality level IV for general TM printing or quality level III for color printing is required (see GPO Publication 310.1).

4.7.3.1 Page imposition. Position pages to maintain specified borders and the copy parallel with the trimmed pages. Extend bleed borders to the edge of the page when trimmed. See figure 3 for impositioning single sheets, foldouts, and scroll checklists. See figure 4 for typical impositioning of bleed borders.

4.7.4 Reprints. (F) Identify all reprints by the word "REPRINT" set in capital letters in the lower left corner of the title page. Merge only those changes previously distributed.

4.7.5 Variance in quantity. Variance in quantity is limited to overruns (see GPO Publication 310.2).

4.7.6 Binder work. Binder work is subject to the following:

4.7.6.1 Trimming. Trim all sheet types in accordance with MIL-STD-38784 and figure 4.

**4.7.6.1.1 Single sheets.** Trim single sheets on all four sides to form the finished sheet size. When the sheet binding edge is perforated, trimming of three sides is permitted. Clearly indicate on the reproduction assembly sheet and the request for reproduction form whether trimming is required on three or four sides.

**4.7.6.1.2 Foldout sheets.** Trim sheets that exceed the dimensions for single sheets to maintain the specified border sizes and, when folded, the linear dimensions to conform to the size of single pages.

**4.7.6.1.3 Scroll checklist.** Trim film to form a finished size of 2.75 by 96 (maximum) inch size.

**4.7.6.2 Folding.** Fold foldout sheets accordance to figure 2. Fold the side away from the binding edge inward. Expose the outside edge of the page being folded. The outside edge of the sheet, after folding, should measure 4 inches, 5 inches, 5.5 inches or 8.5 inches, as applicable, from the binding edge of the sheet. Fold the sheets so that the page number, figure number, and figure title are visible.

- a. For 4 by 8 inch manuals: up to 10.75 inches, use A or 2 fold; up to 17.5 inches, use B or 4 fold; up to 24 inches, use C or 6 fold.
- b. For 5.5 by 7 inch manuals: up to 15.5 inches, use A or 2 fold; up to 25.5 inches, use B or 4 fold; up to 35 inches, use C or 6 fold.
- c. For 5 by 8 inch manuals: up to 13.75 inches, use A or 2 fold; up to 22.5 inches, use B or 4 fold; up to 31 inches, use C or 6 fold.
- d. For 8.5 by 11 inch manuals: up to 23.5 inches, use A or 2 fold; up to 38.5 inches, use B or 4 fold; up to 45 inches, use C or 6 fold.

**4.7.6.3 Collating.** Assemble sheets in proper sequence and position.

**4.7.6.3.1 Collating exception.** When changes to a manual include *single sheets and foldout sheets*, assemble foldout sheets behind the single sheets.

**4.7.6.4 Drilling.** Unless otherwise specified, drill all manuals as shown in figures 5 and 6. Determine the number of holes required and then the overall page dimensions. Ensure drilling for changes or reprints to previously issued publications conforms to the drilling of the basic publication. The reproduction assembly sheet will clearly indicate the required drilling.

**4.7.6.5 Binding looseleaf manuals.**

**4.7.6.5.1 Small manuals.** Staple manuals not bound by covers of separate material and of two sheets (three or four pages) to 0.5 inch thick, at the binding edge. Stagger staples, as required, to enable level packaging of the manuals. Staple manuals of two sheets when the binding edge is trimmed, not perforated.

**4.7.6.5.2 Medium and large manuals.** Cover manuals exceeding 0.5 inch in thickness at the binding edge with shrink wrap (cellophane or plastic). If the contractor does not have shrink wrap capability, tie the manuals twice around in both directions with suitable binder's twine. (N) Bind in accordance with NAVAIR 00-25-150.

**4.7.6.6 Bound manuals.** (A) Use either the perfect binding method or binding with fasteners, posts, shoe strings, or plastic combs. When specified, binding stubs can be used. (M)(N) Bind in accordance with NAVAIR 00-25-150.

**4.8. Printing and binding quality.** Use methods and practices accepted by the industry and suitable to ensure printing and binding produce an acceptable product. The Government will perform any inspection deemed necessary to ensure the quality of the supplies and services provided.

**4.9 Packaging guidelines.** Guideline for packaging printed material are as follows:

**4.9.1 Preliminary technical manuals.** Ship preliminary TMs packed flat in cartons or wrapped separately. Place artwork and text material in one package. Copies of large artwork used only for review purposes may be folded. Packaging need only be adequate for providing safe delivery.

4.9.2 Printing materials. Collate printing materials (photolithographic negatives, offset plates, reproducible camera-ready copy, direct image copy) in numerical sequence, except foldouts. Collate foldouts separately in numerical sequence. Package all printing materials (including foldouts) flat and double packaged. Do not fold or roll printing materials. Ensure the interior material is waterproof and free of any chemical substance that would discolor or otherwise harm the printing materials. Pack printing materials tightly with fillers or thicknesses of corrugated board added to insure protection and stability. Use standard commercial cartons for exterior packaging that is at least equal to Interstate Commerce standards and of sufficient strength to protect against damage. Use cartons that are able to withstand storage, rehandling, and reshipping without the necessity of repacking. Place a slip of white manifold onion skin or other suitable white paper between negatives, including foldouts. Use printed TM pages as slip sheets or fillers. Package original artwork in the same manner as other printing materials.

4.9.2.1 Container information. In addition to sender and addressee information, place the following information on the exterior of each container:

- a. Technical Manual Identification number.
- b. Contract or Purchase Order Number
- c. "Preliminary Technical Manual", when applicable.
- d. The word "NEGATIVES," "OFFSET PLATES," "REPRODUCIBLE COPY," "DIRECT IMAGE COPY," as appropriate.
- e. Number of containers in the shipment

4.9.2.2 Packing list. Include a copy of the letter of transmittal or the packing list inside the carton or container. When a shipment consists of more than one container, enclose the letter of transmittal or packing list in the first container and identify the material that was packed in each container. If a letter of transmittal is used process the letter in accordance with Section 126, US Postal Service, Domestic Mail Manual (DMM).

4.9.2.3 Printing materials. Include a copy of the printed manual when the printing materials are shipped back to the Government. Deliver printing materials by registered mail unless otherwise specified. When registered mail is used, the marking "Registered" is preprinted on the permit imprint shipping label by the acquiring activity.

#### 4.10 Shipping guidance.

4.10.1 Printed copies. Ship printing materials within 72 hours after delivery of the printed manuals. Unless otherwise required, ship publications in accordance with the following instructions:

4.10.1.1 Initial distribution (ID). When required, the printing contractor will make initial distribution shipments using shipping labels furnished by the Government or prepared by the contractor (see figure 7). The date of shipment will be shown in the lower right corner on each label. Distribute 1 to 200 sheets (400 pages) to an addressee using a 9.5 by 12.5 inch No. 32 Kraft envelope. Distribute 200 or more sheets in a standard commercial carton equal to Interstate Commerce standards and of sufficient strength to protect the manuals against damage. Each carton must conform to postal regulations. (M)(N) When required, make initial distribution shipments in accordance with NAVPUBINST 5604.27. (A) Pre-addressed mailing labels will be furnished for ID shipments.

4.10.1.1.1 Shipments. Ship by the most economical means. Initial distribution shipments made by mail to single destinations in the continental United States are limited to 120 pounds per package. (M)(N) Printed pre-addressed permit imprint mailing labels will be furnished by the Government for mail shipments. (F) Printed pre-addressed mailing labels bearing "Postage and Fees Paid, USAF, Permit No. G-1" will be furnished by the Air Force for mail shipments.

**4.10.1.1.2 Weight limitations.** Postal regulations applicable at the time of shipment apply. Weight limitations guidelines for individual packages are as follows:

- a. Shipments to addresses in the continental United States, Alaska, Hawaii, Puerto Rico, US territories and possessions, and to APO or FPO addresses - 70 pounds (see exhibit 125.2, DMM, for specific size and weight limits applicable to a few APO/FPO).
- b. Except as indicated in 4.10.1.1.3c, shipments to addresses in foreign countries - 22 pounds.

Note: Customs tags may be required for shipments to foreign countries. Local post offices will provide tags, labels, and information. If customs tags are required, list contents of shipment only as "Official Military Publications," "No Value," and sender will be the address shown in the return address on the mailing label.

**4.10.1.1.3 Mail markings.** Permit imprint mailing labels furnished to printing contractors for mailing of manuals must bear the applicable mail class as follows:

- a. On the pre-addressed mailing label, for addresses specified in 4.10.1.1.2a, the mail class will be; First Class for envelopes under four ounces, Third Class for envelopes or cartons from four to 16 ounces, and Fourth Class for envelopes or cartons over 16 ounces except when the package is being sent to a freight forwarder for shipment to a foreign government. All manuals sent to a freight forwarder will be sent by traceable means. Manuals consisting of 24 pages or more, at least 22 of which are printed, may qualify for the cheaper special fourth class rate applicable to books. If qualified, use the Special Fourth Class Rate.
- b. All cartons and envelopes having the proportions of parcels to APO/FPO addresses require a delivery date in the lower right corner of the mailing label. If the delivery date requires airlift on the overseas segment of transportation, place "MOM" (Military Office Mail) conspicuously on the address side between the permit imprint and the address. In addition, place the MOM marking on all sides of parcels. Letter height must not exceed 0.5 inch.
- c. For addresses in foreign countries, cartons and envelopes sent Third or Fourth Class must also be marked "Printed Matter" between the permit imprint and the address. Cartons and envelopes sent Special Fourth Class Rate must also be marked "Printed Matter-Books." (Consult local post office for weight limitations applicable to cartons and envelopes sent as Printed Matter-Books. Weight limits vary from 11 to 22 pounds according to specific country of address.)
- d. When more than one package is required to a single address, clearly mark on the wrapping, but not on the mailing label, 1 of 2, 2 of 2, etc.

**4.10.1.1.4 Additional mailing labels.** When additional mailing labels in excess of those furnished by the Government are required, the contractor may prepare them in the same format. The return address and addressee will be identical to that given on the original labels. The same endorsements will be made on these labels as required on original labels.

**4.10.1.1.5 Shipments to APO/FPO addresses.** Whenever the total weight of mail shipments to APO/FPO addresses at New York, San Francisco, Seattle, or Miami exceeds 5,000 pounds; (F) 1,000 pounds; (N) 120 pounds, packages will be consolidated on pallets for freight shipment (Government Bill of Lading) to the Bulk Main Centers (BMC) or Postal Concentration Center (PCC) at the port city. Prepare shipments in accordance with the appropriate port city Military Mailers Guide and attach firmly to pallets. To prevent crushing, stacking of packages is restricted to six or less. Mark each pallet for delivery to the appropriate BMC or PCC. Turn packages so that labels on the outside rows of packages face the center of the stack; not visible from the outside. Deliver freight shipments to BMC and PCC to:



a. New York:

New York Bulk and Foreign Mail Center  
30 County Road  
Jersey City, NJ 07307-4503

b. San Francisco:

Postal Concentration Center  
390 Main Street  
San Francisco, CA 95105-2011

c. Seattle:

Seattle Bulk Mail Center  
34301 9th Avenue, South  
Federal Way, WA 98003-6721

d. Miami:

Jacksonville Bulk Mail Center  
7415 Commonwealth Avenue  
Jacksonville, FL 32099-0001

4.10.1.2 Backup/replenishment stock. Bulk-ship publications remaining after initial distribution to a storage depot in cartons suitable for reshipment by Government mail (maximum weight per carton is 20 pounds). Place a printed label on each carton in accordance with figure 8. When the package contains a reprinted manual, place the word "REPRINT" in the bottom right corner of the "Title", in 0.75 inch bold type. Each carton must conform to postal regulations.

4.10.1.2.1 Backup/replenishment stock shipments. Mail backup and replenishment stock shipments of 120 pounds or less as ordinary mail; send shipments exceeding 120 pounds by freight on a Government Bill of Lading (GBL). Obtain addresses and applicable markings for GBL shipments from the cognizant transportation officer. Do not use pallets for freight shipments to addresses within the continental United States (except as authorized by 4.10.1.1.5) without prior approval of the office initiating the delivery order. (N) Ship backup stock in accordance with NAVPUBINST 5604.33.

4.10.1.2.2 High speed transportation. When necessary, determine the quantity of backup stock that must be shipped by high speed transportation to the storage point.

4.10.1.2.3 Additional information. Place the following additional information, as appropriate, on the "Title" block of the shipping label for each carton:

- a. "Basic issue of (publication number), dated\_\_\_\_"
- b. "Revision of (publication number) dated\_\_\_\_"
- c. "Change Number\_\_\_\_ dated\_\_\_\_ to (publication number) dated\_\_\_\_"
- d. "Reprint of basic (publication number) dated\_\_\_\_"
- e. "Reprint of (publication number) dated\_\_\_\_ up to and including Change Number\_\_\_\_ dated\_\_\_\_"

4.10.2 Classified material. Pack and ship classified material in accordance with the requirements of DOD 5200.1-R, DOD 5220.22-M, and the implementing Service regulations.

4.10.3 Reproduction media. When reproduction media is provided to a printing contractor to make the negatives prior to printing, pack the reproduction media in accordance with the requirements herein, when the copy is returned to the acquiring activity.

## 5. NOTES

5.1 Intended use. This handbook is intended to be used by any organization printing technical manuals for the Government, including Government agencies and printing contractors. This handbook establishes common guidance in the preparation, shipping, receipt, handling, and distribution of printing materials and printed matter and is to be used as guidance. Acquiring activities desiring cite specific printing requirements must include those directions in the contract. This handbook can not be cited in the contract (see Foreword).

### 5.2 Subject term (key word) listing.

- Binding
- Direct image copy
- Direct image master
- Offset plates
- Negatives
- Photolithographic
- Perfect binding
- Reproducible camera-ready copy
- Reproduction assembly sheet

5.3 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

[illegible]

FIGURE 1. Typical reproduction assembly sheet (reproduction running sheet similar).

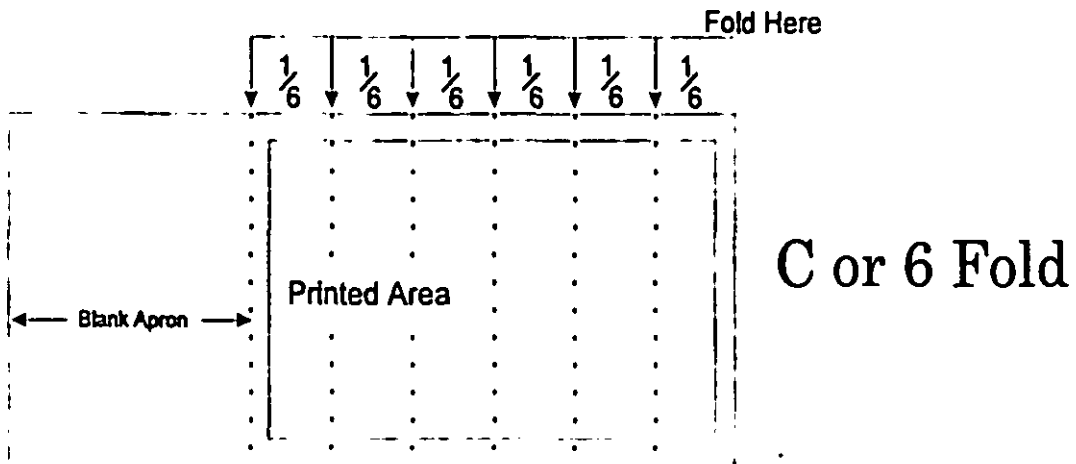
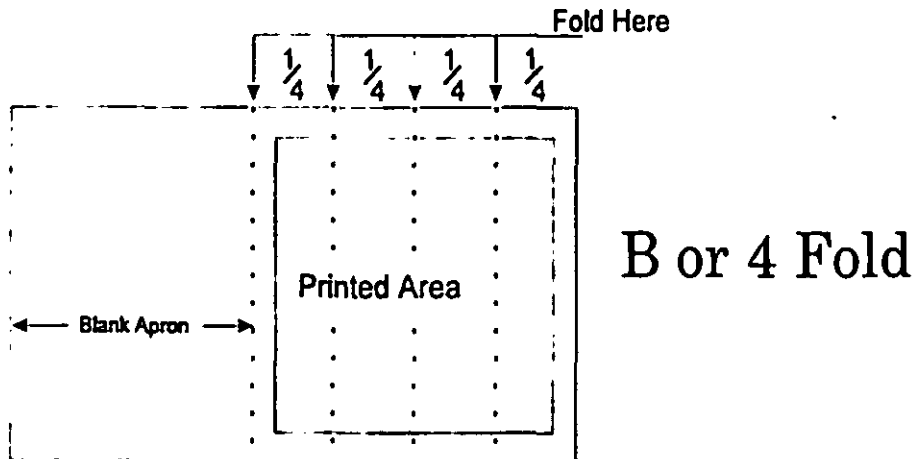
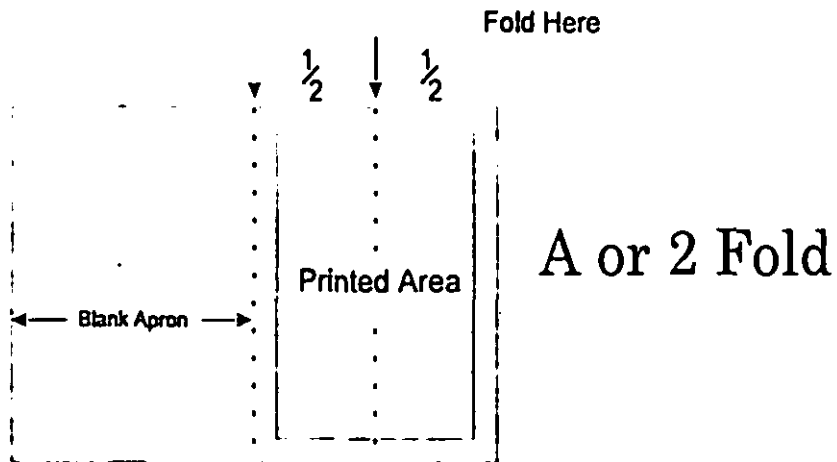


FIGURE 2. *Foldout sheet folding.*

Overall Page Size*		Printed Area*		Binding Edge*	Margins*		
A	B	C	D	E	F	G	↺ Layout dimension
2:75	‡96	‡91	2.5	0.125	0.125	2.5	Scroll checklist
4	5.5	5	3.125	0.625	0.25	0.25	
4.5	7	6.5	3.625	0.625	0.25	0.25	
4	8	7.5	3.125	0.625	0.25	0.25	
‡24	8	7.5	19.5	4.25	0.25	0.25	4 by 8 foldout
5	8	7.5	4.125	0.625	0.25	0.25	
‡31	8	7.5	25.5	5.25	0.25	0.25	5 by 8 foldout
4.5	8	7.5	3.5	0.75	0.25	0.25	
5.5	7	6.5	4.5	0.5	0.5	0.5	
‡35	7	6.5	29	5.75	0.25	0.25	5.5 by 7 foldout
5	8	7.5	4.5	0.25	0.25	0.25	
8	5	4.5	7.5	0.25	0.25	0.25	Work card
6.5	9.5	9	5.5	0.75	0.25	0.25	
9.5	6.5	6	8.5	0.75	0.25	0.25	
8.5	11	10	7.25	1	0.25	0.5	
‡45	11	7.5	36	8.75	0.25	0.25	8.5 by 11 foldout
11	17	10	15.75	1	0.25	0.5	
17	11	16	9.75	1	0.25	0.5	

Notes:

\* All dimensions are in inches.

‡ Maximum

FIGURE 3. *Impositioning and single page (after trimming) dimensions.*

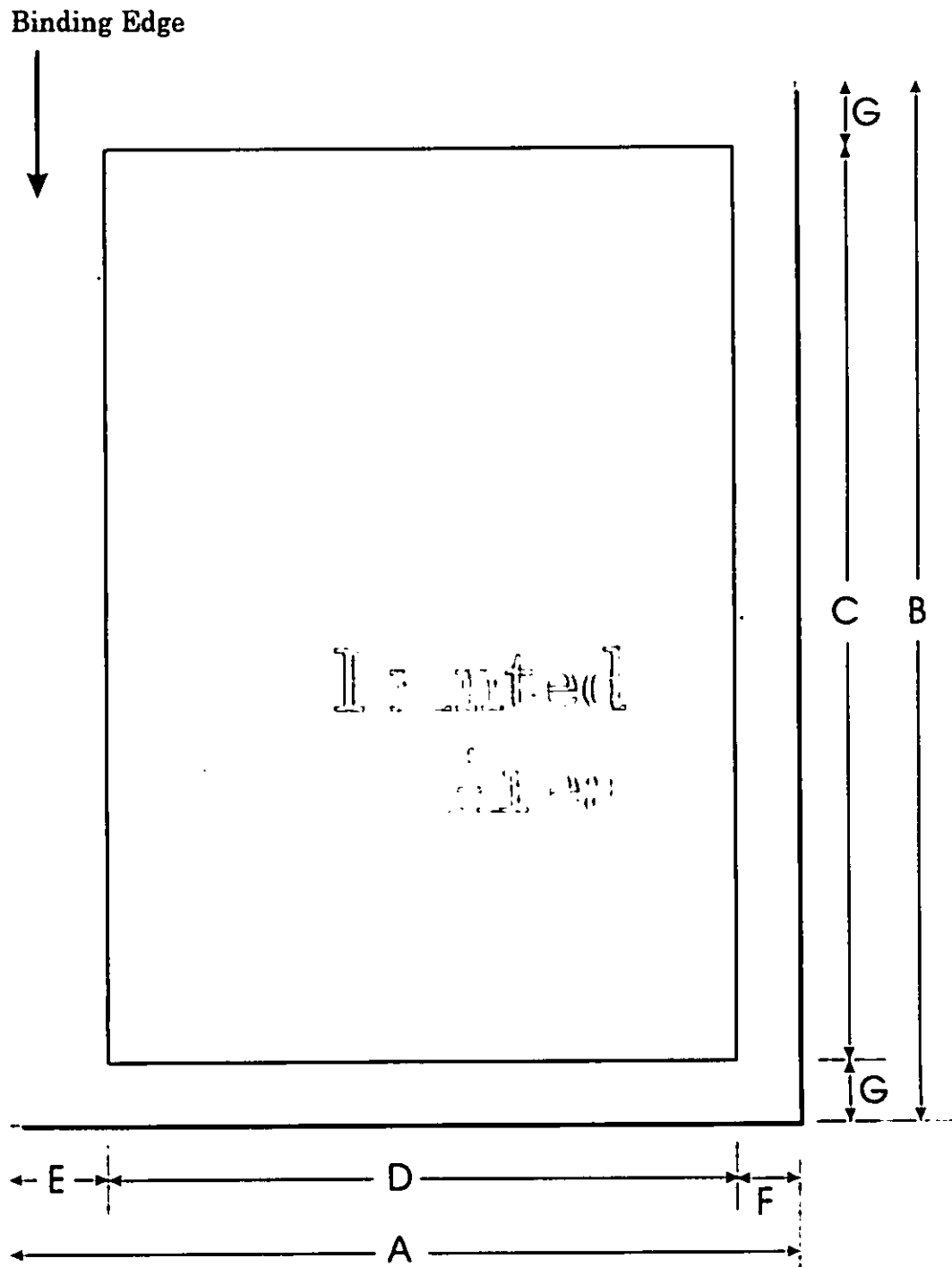


FIGURE 3. *Impositioning and single page (after trimming) dimensions. (Continued).*

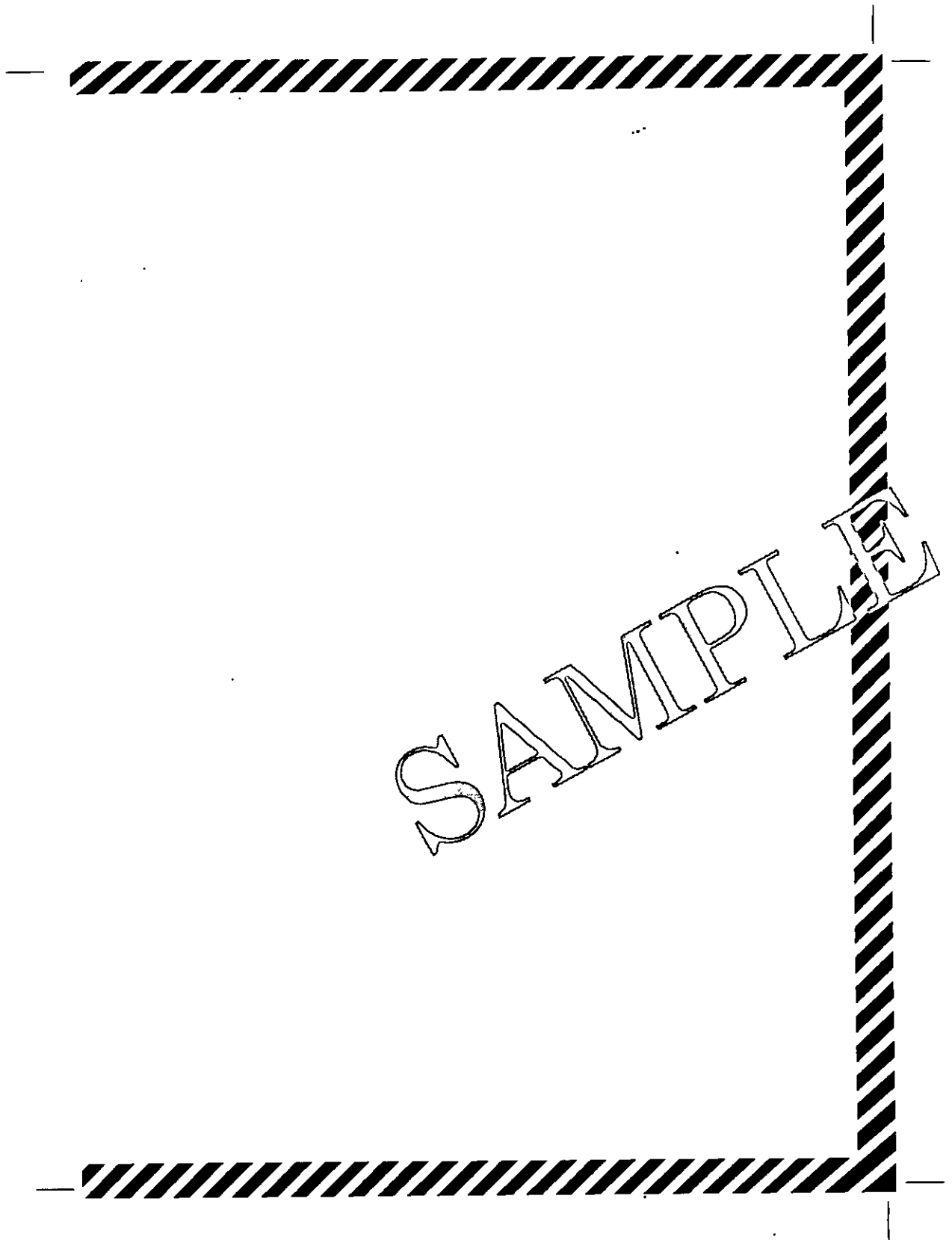
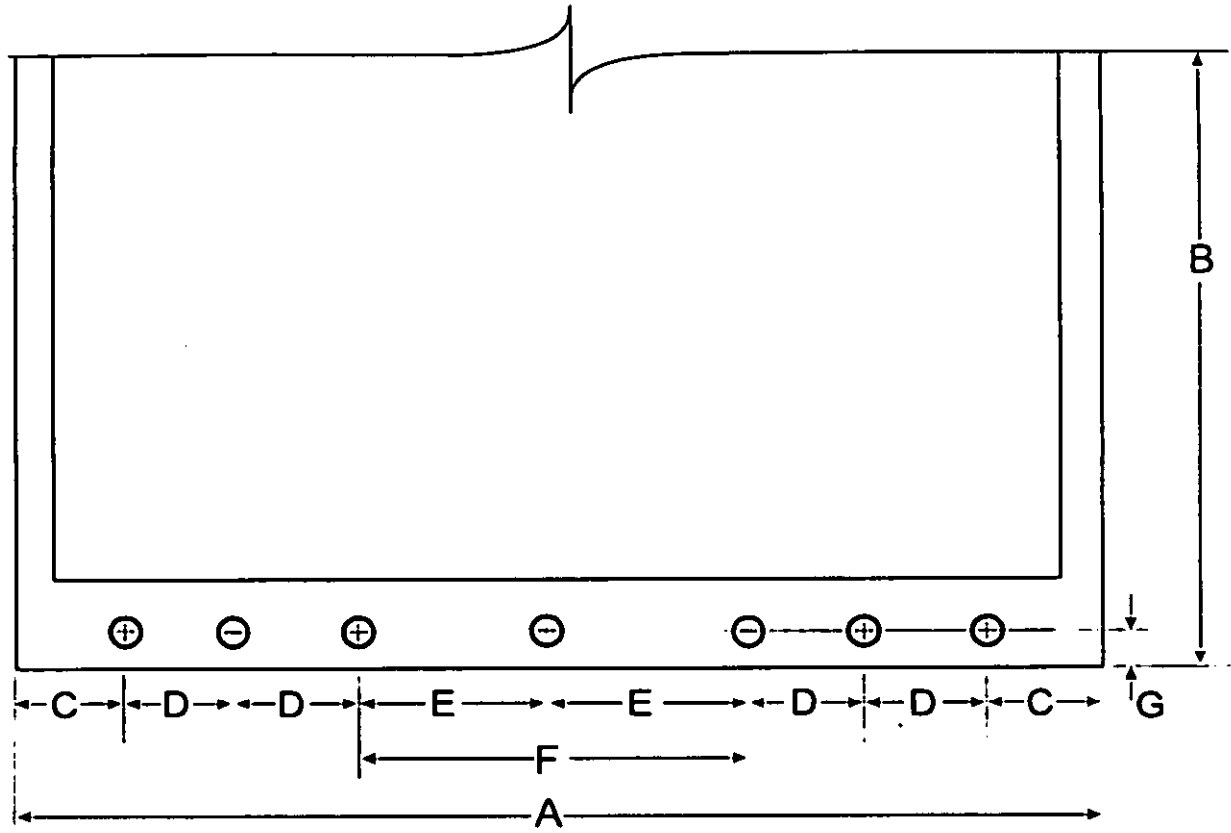


FIGURE 4. *Sample bleed border imposition.*



### Dimensions In Inches

Page Size		Hole Placement				
A	B	C	D	E	F	G
7	5.25	0.5	0.75	--	3	0.25
8	4	1	0.75	--	3	0.25
8	4.5	1	1	1	--	0.312
8	5	1	0.75	--	3	0.25
17	11	1.5	2.75	--	2.75	3

NOTE: Holes are 0.25 inch diameter

FIGURE 5. Drilling dimensions for 6 and 7 hole manuals.



Page Size		Hole Placement					
H	J	K	L	M	N	P	Q
6.5	9.5	1.25	3.5	0.75	--	--	0.18'
8.5	11(3 hole)	2	3.5	--	--	--	0.43'
8.5	11(5 hole)	2	3.5	0.75	--	--	0.18'
8.5	11(9 hole)	2	3.5	0.75	0.75	0.75	0.18'
11	17	2	3.5	0.75	--	--	0.37'
X=	0.25						
Y=	0.4375						

20

FROM:	TECHNICAL ORDER NUMBER	QUANTITY
OFFICIAL BUSINESS PENALTY FOR PRIVATE USE \$300		POSTAGE & FEES PAID USAF PERMIT NO. 0-1
T.O. - 10		
LABEL EXPRES		
		DATE MAILED

(F) Initial distribution (ID) label

DEPARTMENT OF THE NAVY  
NAVAL AIR TECHNICAL SERVICES  
FACILITY, 700 RODGERS AVENUE  
PHILADELPHIA, PA 19111

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE \$300

POSTAGE & FEES PAID  
USN  
PERMIT NO. 0-1

MOM

(M)(N) Initial distribution (ID) label

DEPARTMENT OF THE ARMY  
U.S. ARMY PUBLICATIONS  
DISTRIBUTION CENTER  
1655 Woodson Road  
EL LACK, MD. 21114-5101

OFFICIAL BUSINESS  
On the Front of the Book - Minimum Enclosure Required

SPECIAL FOURTH-CLASS RATE BOOK  
U.S. POSTAGE PAID  
U.S. Army Publications  
and Printing Center

USAPDC-5 120a, 1 February 1998 (Replaces APDC-4 LABEL 120a 15 August 88)

(A) Initial distribution (ID) label

FIGURE 7. Sample initial distribution (ID) labels.

TO:	DEPT.
TITLE:	DEPT. REQUISITION NO.
	GPO JACKET NO.
	QUANTITY
	FORM OR PUBLICATION DATE
FROM:	FORM OR PUBLICATION NO.
	GPO ORDER NO.
	PRINT ORDER NO.

(F) Backup Stock Label

TO	DEPT.
STOCK NO.	DEPT. REQUISITION NO.
	GPO JACKET NO.
	QUANTITY PER CONTAINER
	PACKAGES PER CONTAINER
CONTROL NO.	PKGS. OF
SUB. ID NO.	FORM OR PUBLICATION NO./DATE
TITLE	GPO ORDER NO.
FROM	PROGRAM/PRINT ORDER NO.

(M)(N) Backup Stock Label

FIGURE 8. Sample backup stock labels.

**CONCLUDING MATERIAL**

**Custodians:**

Army - TM

Navy - SA

Air Force - 16

Defense Logistics Agency - DH

**Preparing Activity:**

Air Force - 16

Project: TMSS-0321

**Review Activities:**

Army - AT, AV, CE, CR, MI

Navy - AS, CG, EC, MC, OS

Air Force - 01, 10, 11, 13, 19, 33, 99

Defense Logistics Agency - CS, CT, GS

# STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

## INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

1 RECOMMEND A CHANGE:	1. DOCUMENT NUMBER MIL-HDBK-38790	2. DOCUMENT DATE (YYMMDD) 97/02/24
3. DOCUMENT TITLE Printing Production of Technical Manuals		
4. NATURE OF CHANGE (Indicate paragraph number and include proposed revision, if possible. Attach extra sheets as needed.)		
5. REASON FOR RECOMMENDATION		
6. SUBMITTER		
a. NAME (Last, First, Middle Initial)	b. ORGANIZATION	
c. ADDRESS (include Zip Code)	d. TELEPHONE (include Area Code) (1) Commercial (2) AUTOVON (If applicable)	e. DATE SUBMITTED (YYMMDD)
8. PREPARING ACTIVITY		
a. NAME Steven C. Holloway	b. TELEPHONE (include Area Code) (1) Commercial (513) 257-3085 (2) AUTOVON 787-3085	
c. ADDRESS (include Zip Code) Det 2, HQ ESC/AV-2C 4027 Col. Glenn Hwy., Suite 300 Dayton, OH 45431-1672	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office 7203 Leeburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340	